MICRO CASE 38 --- enterohemorrhagic E.coli (All of this minus the work-up, mention of TPP, and microbiologic properties is in our class notes)

A 75-year old man experienced the acute onset of **severe abdominal cramps**. Later in the morning, watery diarrhea occurring every 15 to 30 minutes developed, initially with small amounts of visible blood. Diarrhea subsequently became **markedly bloody**. He was nauseated but not vomiting.

Recent food intake history was remarkable for **eating a hamburger at a backyard BBQ** 2 days earlier. The patient recalled that the **meat inside was pink**. He said his teenage grandson ate at the BBQ and had the same illness but with milder symptoms.

* PHYSICAL EXAM:
  + Grossly bloody stool
* DIAGNOSTIC WORK UP
  + **Enteric bacterial stool cultures**
  + In failed culture investigations:
    - **Toxin testing** for C. difficile
    - **Microscopic examination** for protozoal agent or stool Ags
* DIFFERENTIAL:
  + Dysentery: Salmonella spp.; Shigella spp.; EIEC; Yersinia entercoliticis
  + EHEC
  + IBD
  + **Note that dysentery would have a fever along with the bloody diarrhea**\*\*\*
* Source = EHEC
* MICROBIOLOGICAL PROPERTIES
  + **Indole positive, lactose-positive, sorbitol-NONfermenting isolate**
  + **Shiga-toxin producing strains confirmed by cytopathic effect** on assay using cell culture
* MANNER OF EXPOSURE
  + Ground beef; unpasteurized milk
  + Contaminated water 🡪 contaminating our food
  + **Secondary person-to-person spread by fecal-oral route**
* PATHOGENESIS
  + **Thrombotic thrombocytopenia purpura (TPP)**
    - Complication of EHEC along with HUS
    - Believed to result from a combination of platelet effects: destruction, increased consumption, sequestration in the liver and spleen and intrarenal aggregation.
  + Our class notes actually have more than stated in this case but main points:
    - Attach and EFFACE brush border of the intestinal epithelium
    - Rearrangement of cytoskeleton with proliferation of actin beneath area of intimate bacterial attachment
    - Shiga toxins selective for colonic and renal endothelial cells
* Treatment
  + Do NOT require antimicrobial therapy. **ATBS may even increase expression of Shiga toxin and contribute to kidney damage**
* Factors leading to enhanced resistance and susceptibility
  + Young and old have more severe symptoms